The Green –Duwamish Ecosystem Restoration Program

Bringing Together the Watershed

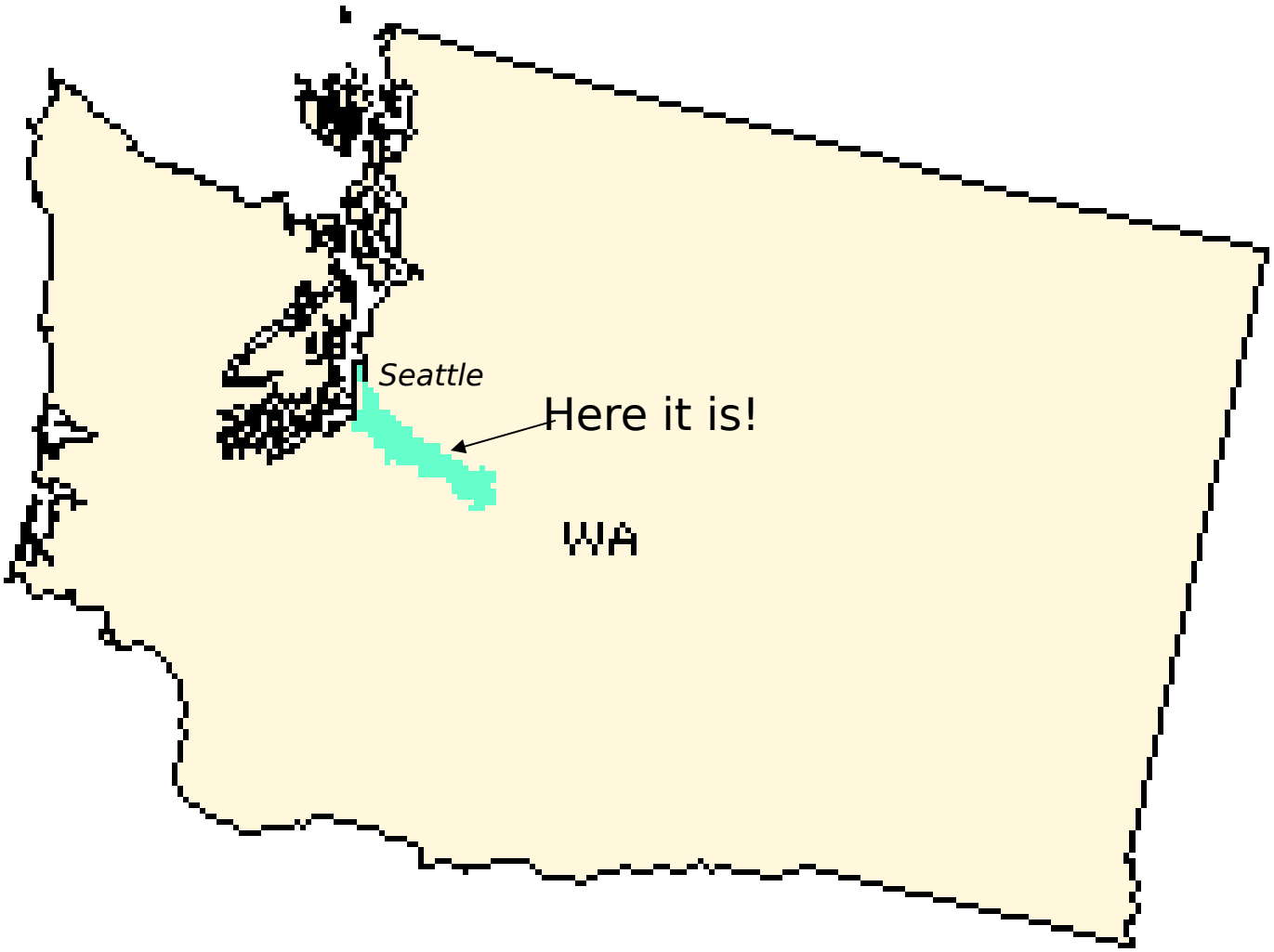
Presentation Format

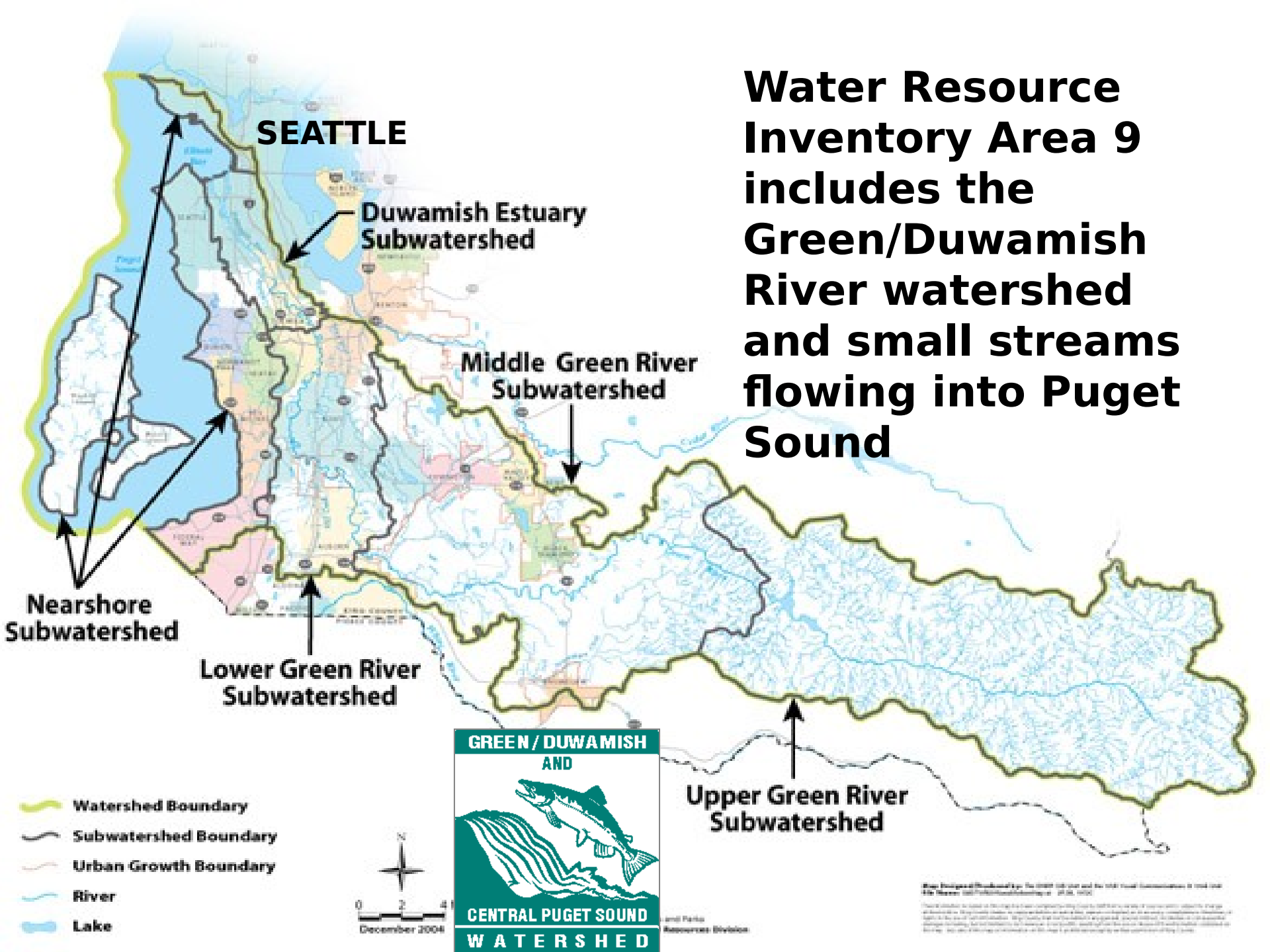
- What is the Ecosystem Restoration Program (ERP)?
- Location
- Stakeholders
- Ecosystem Situation
- Plan Development
- Getting to Turning Dirt

What is the ERP?

- Watershed based ecosystem restoration program GI Authority
- Multi-jurisidictional
- Multiple projects authorized in the watershed
- Focused on habitat improvement versus one species
- Initiated in 1995

Green Duwamish Watershed




SEATTLE
Duwamish Estuary Subwatershed
Middle Green River Subwatershed
Nearshore Subwatershed
Lower Green River Subwatershed
Upper Green River Subwatershed
Water Resource Inventory Area 9 includes the Green/Duwamish River watershed and small streams flowing into Puget Sound
GREEN / DUWAMISH AND CENTRAL PUGET SOUND WATERSHED
Watershed Boundary
Subwatershed Boundary
Urban Growth Boundary
River
Lake
N
0 2 4
December 2004

Green/Duwamish and Central Puget Sound Watershed

- 568 square miles
- 565,000 people
- 1 county and 15 cities
- Diverse land uses:
  - forestry (47%)
  - residential (36%),
  - industrial/commercial (7%)
  - agriculture (5%)
  - parks (3%)

Also known as Water Resource Inventory Area 9 or "WRIA 9"

Same river!

STAKEHOLDERS

- 16 Municipalities
- Federal Agencies – EPA, NMFSW and USFWS
- State Agencies
- Tribes
- The Public – Including Environmental Groups and the Development Community

Ecosystem/Watershed Status

- Ninety-seven percent of the estuary has been dredged or filled
- Seventy percent of the watershed (and flows) has been diverted out of the basin
- About ninety percent of the floodplain is no longer connected to the river
- Salmonid populations are being impacted by river conditions

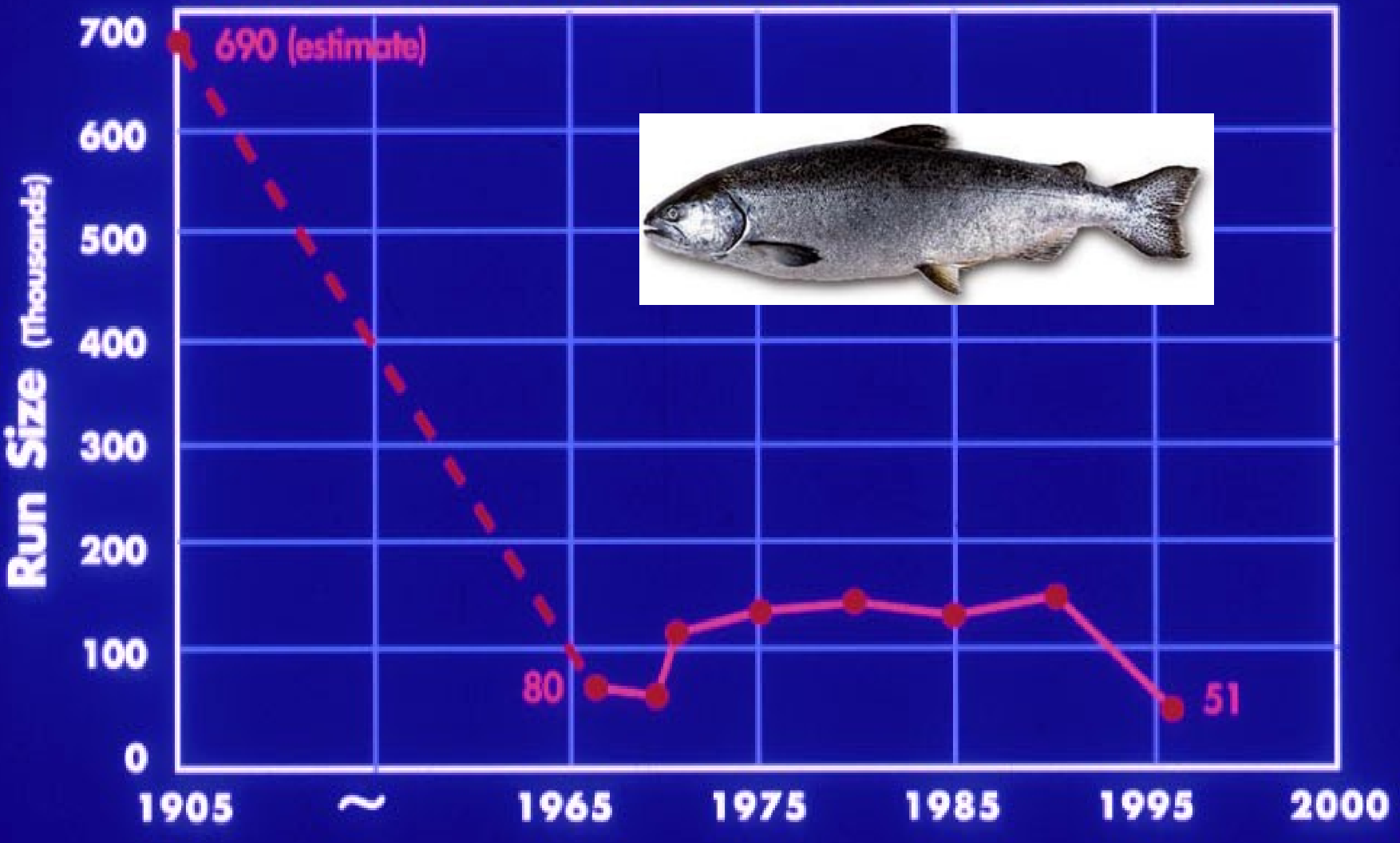
Endangered Species Act and Puget Sound Species

- By 2006, Puget Sound species were listed:
  - Chinook - “threatened”
  - Bull trout - “threatened”
  - Orca – “endangered”
  - Bald Eagle – “threatened”
  - Steelhead – “proposed”
  - Coho - “candidate”

- We must not harm the “threatened or endangered” species themselves ***or the habitat they depend on***
- A “recovery plan” that includes habitat measures must be developed for Puget Sound

Anadromous Pacific Salmon and Trout

Wild Puget Sound Chinook Salmon Run Size

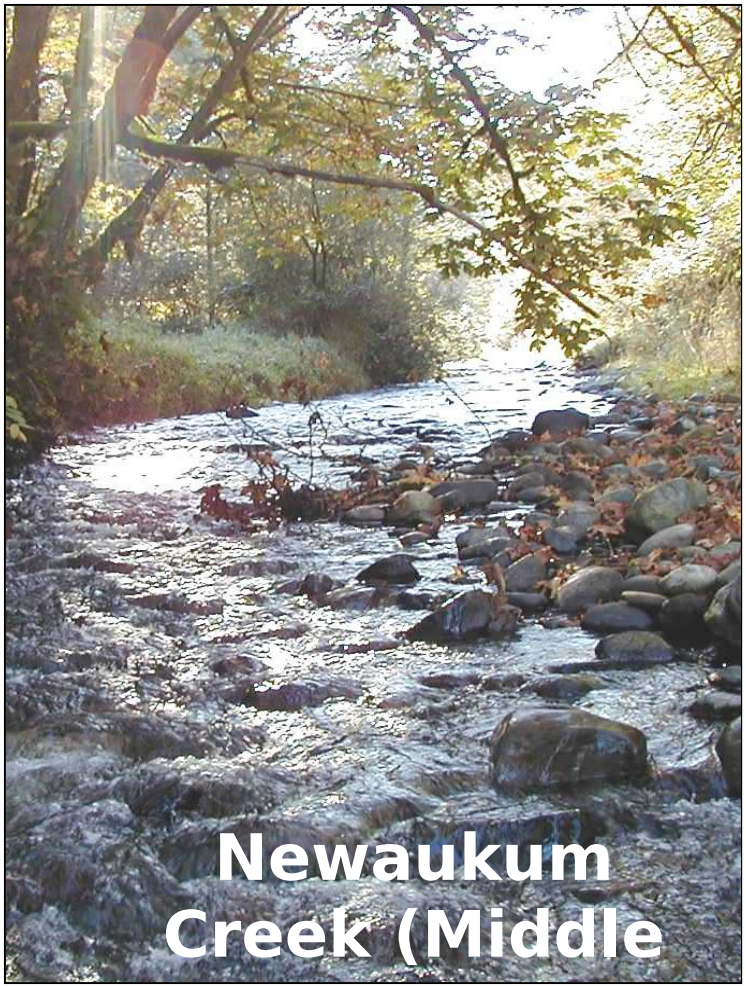


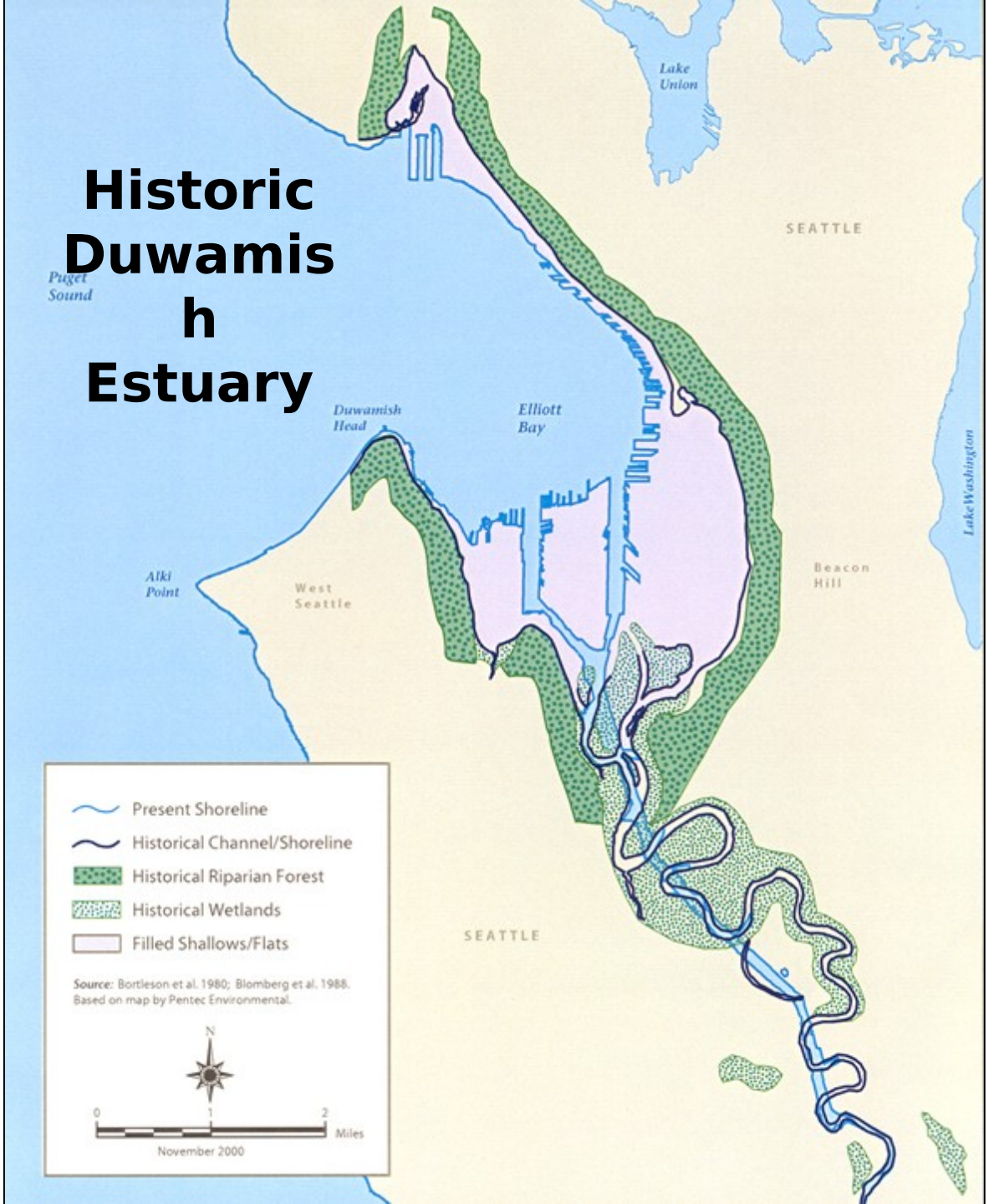
Bull Trout

The Super Fish!

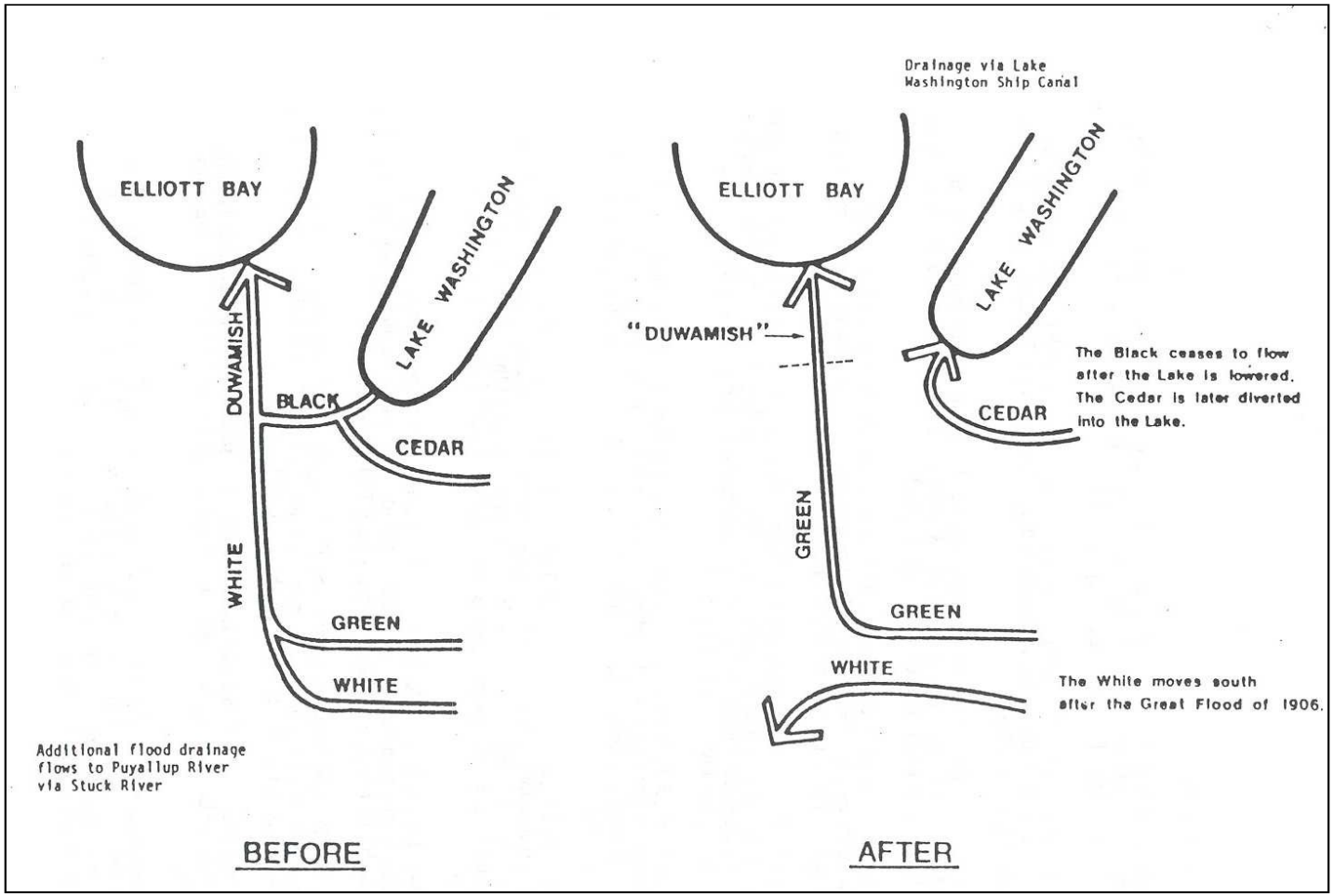
Habitat Factors of Decline

- Channel structure
- Sediment transport
- Water quality (temperature, dissolved oxygen, pollutants)
- Riparian condition
- Land use alteration
- Hydrology




Historic Duwamish Estuary
Lake Union
SEATTLE
Puget Sound
Duwamish Head
Elliott Bay
Lake Washington
Alki Point
West Seattle
Beacon Hill
SEATTLE
Present Shoreline
Historical Channel/Shoreline
Historical Riparian Forest
Historical Wetlands
Filled Shallows/Flats
Source: Bortleson et al. 1980; Blomberg et al. 1988.
Based on map by Pentec Environmental.
N
0
1
2
Miles
November 2000

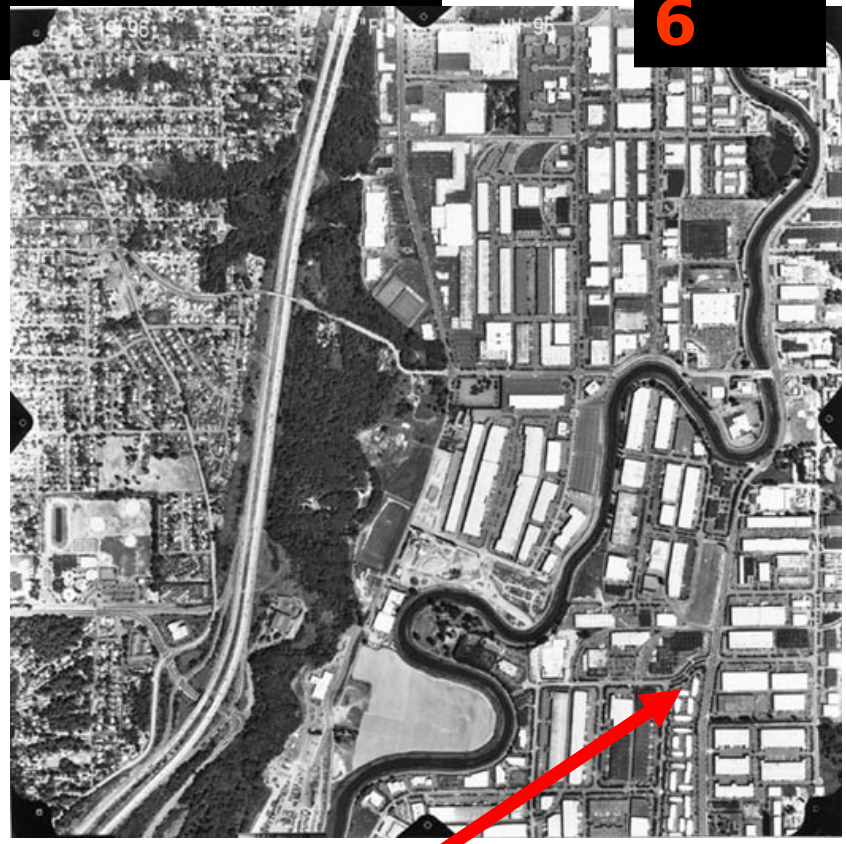
Repluming of the Green River



Tukwila/Kent Area

1965

1996



West Valley Hwy

OTHER RESTORATION EFFORTS

- WRIA 9 Work Group
- Shared Strategies
- NRDA Process
- Local Restoration Groups
- Other Corps efforts
  - HHD AWS
  - PSNER

Watershed Planning Key Part of Puget Sound Shared Strategy

- Puget Sound regional recovery plan ("Shared Strategy") includes WRIA plans
- Watershed plans are primary element in "habitat" piece of the regional recovery plan

Watershed Planning Key Part of Tri-County ESA Response

- Land management: planning and regulatory
- Stormwater programs
- Habitat acquisition and restoration
- Monitoring and adaptive management
- WRIA watershed planning – had universal support of watershed cities
- Regional Road Maintenance Endangered Species Act (ESA) Program

SO WHY DO THE ERP?

- Just one piece of the puzzle
- Cost sharing incentive
- Corps ability to handle large projects

GOALS OF THE ERP

- To improve the overall health of the Green/Duwamish River Ecosystem for fish and wildlife species by restoring (increasing) the amount and quality of spawning and rearing habitat.

OBJECTIVES

1. Improving the physical nature of degraded habitat
2. Improving Ecosystem Functions and Values (including riverine processes)
3. Addressing important factors limiting habitat productivity

WRIA 9 Priority Habitats and Areas

- Transition zone habitat:
  section of Duwamish Estuary
- Rearing/migration habitat:
  Lower Green River mainstem,
  Duwamish Estuary mainstem,
  marine nearshore
- Spawning habitat:
  Middle Green River and
  upper one-third of Lower Green River
  Above Howard Hanson Dam

Plan Formulation

- Based on plan goals a suite of projects were developed for evaluation
- 67individual projects and programmatic actions were evaluated and ranked by technical committee
- 45 projects were advanced for authorization

Getting to Authorization

- Approval for 45 project-specific and programmatic restoration measures throughout the basin
  - Programmatic (Large Woody Debris and Gravel enhancement; Voluntary Revegetation)
  - Individual Projects (Side Channel Construction, Levee Setbacks, Improve Habitat Connectivity, Channel Restoration, Restore Wetlands)
- $115,879,400 was authorized (WRDA 2000)

Now That We Got the Authorization, What Do We Do? (The Real Work Begins)

- Moving from general to detailed
- The devil is in the details
- Process based restoration
- Restoration does not mean the same thing to everyone
- Dealing with the regulators

TURNING DIRT!

Meridian Valley Creek Restoration

- First ERP project to get to construction
- Even though basic project was approved in Feasibility Study and EIS there were still problems getting to implementation
  - Dealing with the regulators
    - Water Quality Concerns
    - Sovereign Immunity
  - Cultural Resources concerns
  - Constructability (Process Based Restoration)

Meridian Valley Creek Flume Restoration

Aerial of Flume and New Alignment

WATER QUALITY
MONITORING

SHOCKING!!!!!

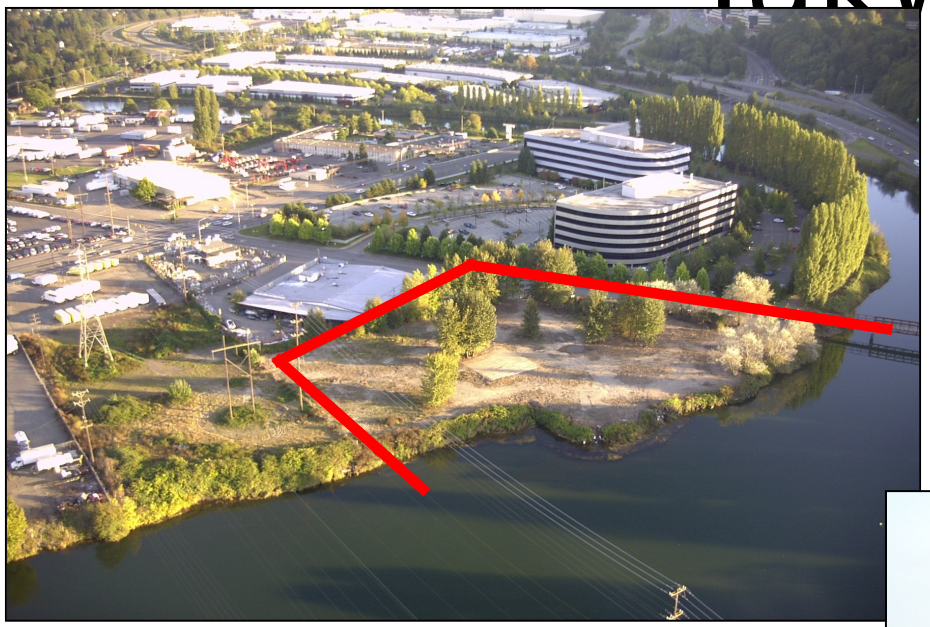
CAN ANYONE TELL ME
WHERE THE
PROTECTED CULTURAL
RESOURCES SITE
IS?????
DEERE

CHANNEL BEFORE
WATERING IT UP

PC200

COMPLETED PROJECT

North Wind's Weir in Tukwila



- Transition area for juveniles
- Highest concentration of salmon smolts in spring

- $1.9 million purchase price
- 2-acre restoration project

  funded for 2005-2006
- Restore intertidal wetlands

Gravel Supplementation and Engineered Log Jams on Middle Green September 2003

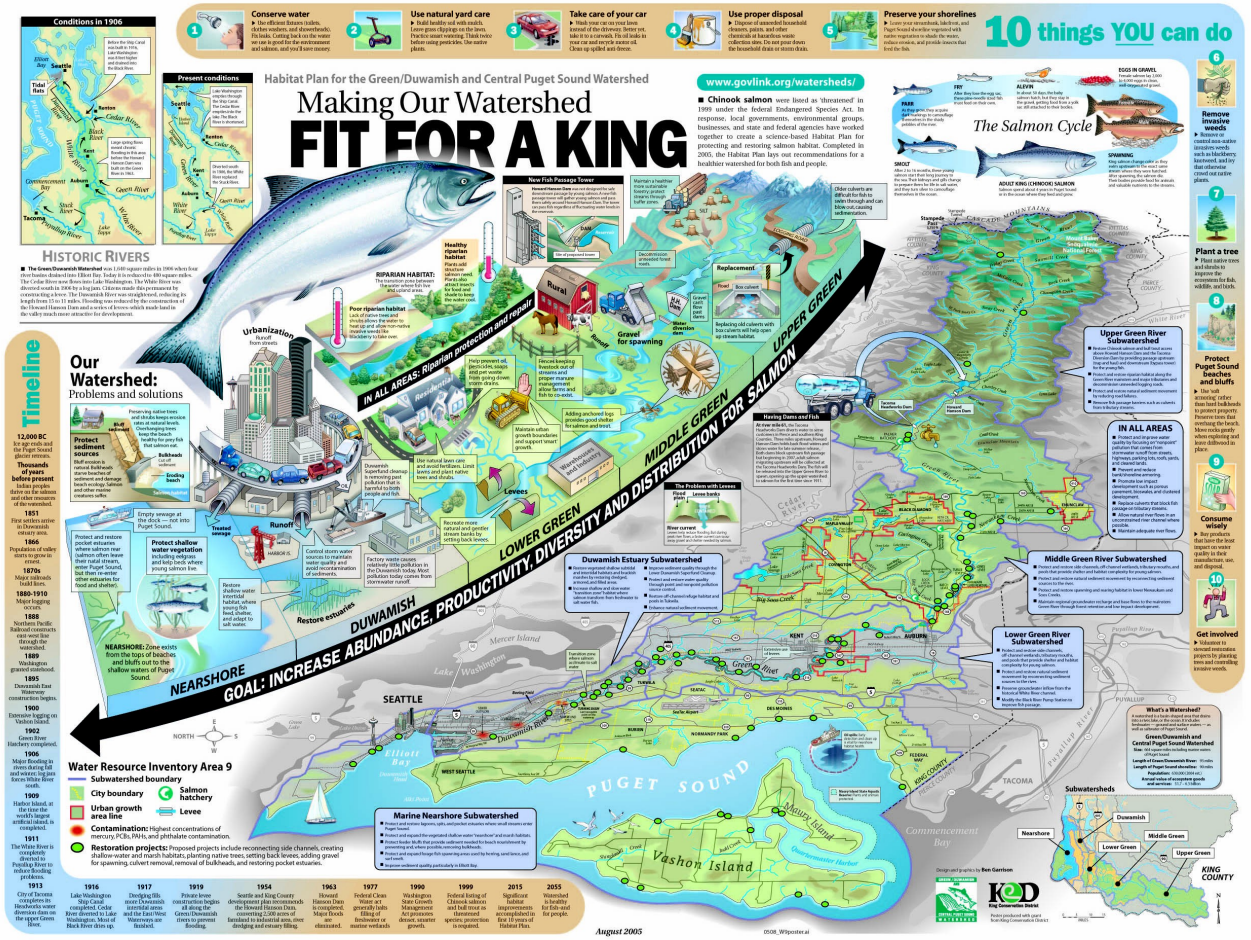
Take Away Points

- There is no such thing as an easy Restoration Project
- Relationships in the watershed must continuously be cultivated and reinforced
- Involve Everyone!
- Promote Stewardship
- Keep a good administrative record or it will come back to haunt you.

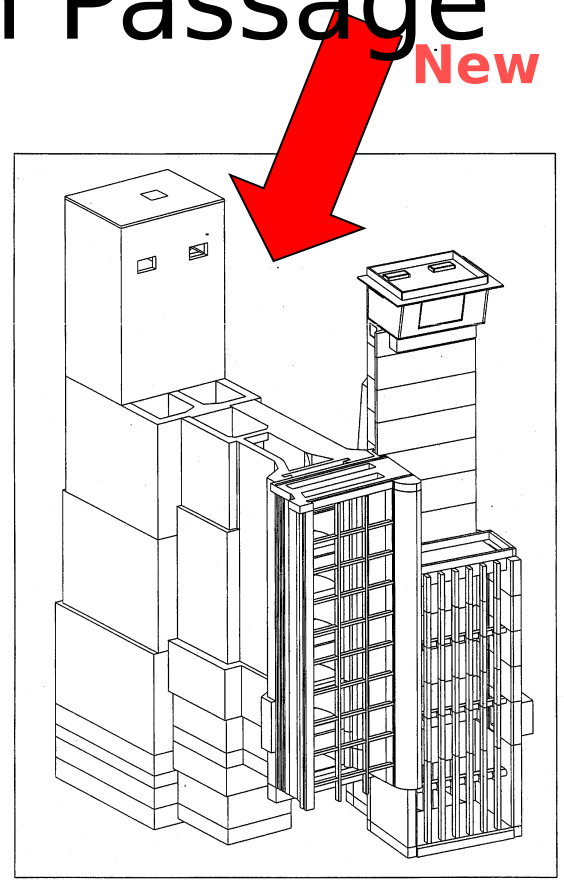
SPECIAL THANKS

- Dennis Clark, King County WRIA 9 Public Outreach/Stewardship Coordinator Watershed Coordination Services Team
- Noel Gilbrough, Green-Duwamish ERP Program Manager, Seattle District
- Nicolle Rutherford, Lead Environmental Coordinator on Meridian Valley Creek, Seattle District
- Mark Ziminske, Chief, Environmental Resources Section, Seattle District

Making Our Watershed Fit for a King


10 things YOU can do
Conserve water
Use natural yard care
Take care of your car
Use proper disposal
Preserve your shorelines
Habitat Plan for the Green/Duwamish and Central Puget Sound Watershed
Making Our Watershed
FIT FOR A KING
www.govlink.org/watersheds/
Chinook salmon were listed as 'threatened' in 1999 under the federal Endangered Species Act. In response, local governments, environmental groups, businesses, and state and federal agencies have worked together to create a science-based Habitat Plan for protecting and restoring salmon habitat. Completed in 2005, the Habitat Plan lays out recommendations for a healthier watershed for both fish and people.
Conditions in 1906
Present conditions
HISTORIC RIVERS
The Salmon Cycle
Our Watershed:
Problems and solutions
Timeline
IN ALL AREAS: Riparian protection and repair
UPPER GREEN
MIDDLE GREEN
LOWER GREEN
DUWAMISH
NEARSHORE
GOAL: INCREASE ABUNDANCE, PRODUCTIVITY, DIVERSITY AND DISTRIBUTION FOR SALMON
Water Resource Inventory Area 9
Subwatershed boundary
City boundary
Urban growth area line
Salmon hatchery
Levee
Contamination: Highest concentrations of mercury, PCBs, PAHs, and phthalate contamination.
Restoration projects: Proposed projects include reconnecting side channels, creating shallow-water and marsh habitats, planting native trees, setting back levees, adding gravel for spawning, culvert removal, removal of bulkheads, and restoring pocket estuaries.
Duwamish Estuary Subwatershed
Middle Green River Subwatershed
Lower Green River Subwatershed
Upper Green River Subwatershed
Marine Nearshore Subwatershed
IN ALL AREAS
Subwatersheds
Duwamish
Nearshore
Middle Green
Lower Green
Upper Green
KING COUNTY
SEATTLE
PUGET SOUND
Vashon Island
Mercer Island
Lake Washington
TACOMA
August 2005

Howard Hanson Dam Downstream Fish Passage Facility



Howard Hanson Dam Planned Fish Bypass Facility Intake Structure (2003)